

ABSTRACT

In a conventional polymer membrane electrode assembly, particularly when operated for a long period of time, a portion of the polymer electrolyte membrane to be in contact with the gas diffusion layer has suffered significant degradation. In order to address this, in a membrane electrode assembly including a hydrogen ion conductive polymer electrolyte membrane, a pair of catalyst layers arranged on both surfaces of the polymer electrolyte membrane, and a pair of gas diffusion layers, each including a fibrous substrate, arranged on the outer surfaces of the catalyst layers, a thickness T_A of a center portion that faces the catalyst layer and a thickness T_B of a peripheral portion surrounding the center portion are set to satisfy a expression (1):

$$0.7 \leq T_B/T_A \leq 0.9.$$